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August 1954

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Southwestern Medicine

Official Journal of The Southwestern Medical Association
and The El Paso County Medical Society

Vol. 35 August 1954 No. 8

Leading Scientists to Speak at Southwestern Meet

Dr. Edwin H. Ellison

Dr. A. E. Maumenee

Announcement of two more speakers scheduled for the annual meeting of the Southwestern Medical Association, November 17 to 19, in El Paso has been made by Dr. W. W. Schuessler of El Paso, president of the Association.

Presenting scientific papers at the meeting will be Dr. Edwin H. Ellison of Columbus, Ohio, and Dr. A. E. Maumenee of San Francisco. Other speakers announced to date are Dr. William Parson, Professor of Internal Medicine at the University of Virginia School of Medicine, and Dr. Kinsey M. Simonton, Associate Professor of Otolaryngology in the Mayo Foundation.

Dr. Ellison is Associate Professor of Surgery at the Ohio State University School of Medicine. He will speak on "Pancreatitis", "Preoperative Evaluation of the Surgical Patient", and "Splenectomy for Hypersplenism.

Dr. Maumenee is Professor of Surgery in Ophthalmology at the Stanford University School of Medicine and Chief of the Division of Ophthalmology at the Stanford University Hospital. His subjects have not yet been announced.

The convention committee, headed by Dr. Maynard Hart of El Paso, has received considerable favorable comment on the program plans, which depart from past procedures in that the Academy of General Practice and Special Sections will meet on Wednesday, November 17, with the General Meeting on Thursday and Friday, November 18 and 19. Headquarters for the meetings and scientific exhibits will be at the Hotel Paso Del Norte.

Aphorisms and Memorabilia

Truths and Concepts Concerning the Genito-Urinary Tract

By Andrew M. Babey, M. D., Las Cruces

1. "The damage to the renal tubules which so often is the cause of acute anuria is usually localized in the ascending part of Henle's loop and in the distal convoluted tubules. This explains the term 'lower nephron nephrosis,' by which this syndrome is designated. On the other hand, it should not be forgotten that very often the proximal tubules are also involved in acute anuria." — I. Snapper, *The Journal (AMA)*, Oct. 1953, p. 21.

2. "As soon as the glomeruli, which are derived from the mesenchyma, are involved, complete regeneration is much less probable, because scar formation and fibrous degeneration of the glomeruli will often result. The tubular lesion is purely epithelial in character and, as in all epithelial lesions, a complete recovery without scar formation is possible. When sufficient time is available, the necrotic tubules regenerate and a completely normal kidney results. It has been demonstrated that regeneration of the necrotic tubules starts after four days and diuresis sets in after an average of 10 days. It follows that in the majority of patients with acute anuria caused by lower nephron nephrosis, the purpose of the treatment is to extend the survival period of the patient to ten or fourteen days. — I. Snapper, *loc. cit.*, p. 22.

3. "Thus, in lower nephron nephrosis, the glomeruli form an ultra filtrate of the blood plasma in the normal way. Then during the passage through the damaged or necrotic tubules, all the glomerular filtrate is absorbed because the tubular epithelium has been transformed into a non-specific dialyzing membrane. The colloid osmotic pressure of the proteins of the circulating plasma draws all the water present in the lumen of the necrotic tubules into the blood stream with resulting anuria. Unfortunately, the old concept of obstruction of the tubules by necrotic material is still prevalent in the minds of many physicians. Thus, the treatment is only too often centered upon the removal of this obstruction by trying to flush the necrotic material out of the tubules." — I. Snapper, *loc. cit.*, p. 22.

4. "It cannot be over-emphasized that the introduction of large amounts of fluid is extremely dangerous for a patient with acute anuria, especially if the fluid is given in the form of milk or large amounts of saline solution. Since the anuric patient does not eliminate either water or salts, these methods lead to overfilling of the circulation and to overloading with sodium chloride. Most of the anuric patients treated in this way do not die of uremia but of left heart failure, edema of the lungs or brain, and anasarca." — I. Snapper, *loc. cit.*, p. 22

5. "Even more significant is the fact that potassium, which is an important damaging factor in uremia, is liberated from the broken-down cells and in this way complete starvation during anuria can increase the hyperpotassemia." — I. Snapper, *loc. cit.*, p. 22.

6. "The treatment of patients with anuria must accommodate these facts. During the oliguric and anuric phase, the amount of fluid given to the patient should be restricted. Unless fluid is lost by vomiting and diarrhea, the fluid intake should not exceed 800 cubic centimeters, maximally, 1,000 cubic centimeters. This quantity is sufficient to replace the volume of water lost through the skin and the lungs. The fluid administered should not contain potassium. Since fruit juice is high in potassium content, no orange juice should be given to anuric patients; but the popular drink should be replaced by sugar water or weak tea with sugar. In order to avoid increasing the hyperpotassemia inordinately through the breakdown of cells, calory-providing food should be given." — I. Snapper, *loc. cit.*, p. 22.

7. "More popular is the mixture advocated by Bull. A mixture of 400 grams of glucose and 100 grams of peanut oil is emulsified with gum acacia and diluted with water to 1 liter. This emulsion is given daily by continuous intragastric drip via a plastic intranasal tube 2 to 3 millimeters in diameter. Not every patient tolerates this mixture. It sometimes causes vomiting and diarrhea." — I. Snapper, *loc. cit.*, p. 22.

8. "Efforts to raise the chloride content of the serum during uremia have always had catastrophic results and, thus, attempts to restore hemeostasis in uremia require great caution. At the same time, it is highly questionable that the increase of blood urea, uric acid, and creatinine actually threaten life; the retention of these waste products is probably not of great clinical importance." — I. Snapper, *loc. cit.*, p. 23.

9. "It is certain that the accumulation of at least two dialyzable substances in the blood of the anuric patient — potassium and inorganic and aromatic acids — threaten life. Since these substances are dialyzable, they can be removed by extracorporeal dialysis. In most cases, we should be satisfied to improve the condition of anuric patients by the removal of these two toxic substances and should not strive for complete restoration of hemeostasis of the plasma." — I. Snapper, *loc. cit.*, p. 23.

10. "If at all possible, potassium should be removed from the plasma during the anuria, even before a considerable degree of hyperpotassemia has been reached and before changes in the electrocardiogram can be discovered. Potassium can be removed by lavage of the small intestine. Kelly and his associates have placed a Levine tube in the stomach and a Miller - Abbott tube in the jejunum. In the course of twenty-four hours, 4 liters of a solution containing 0.6 per cent NaCL, 0.3 per cent NaHCO-3, 0.01 per cent calcium gluconate, and 2 per cent glucose are introduced via the Levine tube and sucked out via the Miller-Abbott tube. By this lavage, large amounts of potassium can be removed within a few hours. This method is so effective that every few hours the potassium content of the serum must be determined in order to prevent dangerous hypopotassemia." — I. Snapper, *loc. cit.*, p. 23.

11. "Since anemia interferes with the function of the kidney, small transfusions of packed cells are helpful. The amount of sodium citrate which is introduced with the red cells may have a beneficial effect." — I. Snapper, *loc. cit.*, p. 23.

12. "It must be added that the handling of patients who develop anuria after an operation is much more complicated. It is difficult to estimate exactly the amount of extra fluid and salts the postoperative condition of these patients requires. Comparable difficulties are encountered when the uremic patient develops fever." — I. Snapper, *loc. cit.*, p. 23.

13. "Perineal pain is not a sympton of prostatitis and in our experience is invariably related to a functional disorder." — Edward N. Cook, M. D. *Proceedings of the Staff Meetings of the Mayo Clinic.* May 5, 1954, p. 248.

14. "It might be well to mention here that prostatitis is never responsible for psychic impotence or premature ejaculation or any of the other various disturbances of the sexual function." — Edward N. Cook, M. D. *Proceedings of the Staff Meetings of the Mayo Clinic.* May 5, 1954, p. 248.

15. "Although treatment of prostatitis is of great value in many instances, I am certain that its careless and unnecessary administration at times has produced local irritation and distress as well as making many prostatic cripples from a psychic standpoint While prostatitis is as respectable a disease as any other, the connotation frequently ascribed to it often produces extreme anxiety and psychic disturbances which outweigh in seriousness the consequences of the prostatitis itself. We doctors are often to blame for this and we must see that it does not happen." — Edward N. Cook, M. D. *Proceedings of the Staff Meetings of the Mayo Clinic.* May 5, 1954, p. 249.

Mrs. George Turner Heads A. M. A. Women's Auxiliary

Mrs. George Turner of El Paso, Texas, the wife of Dr. George Turner, who is the immediate past president of the Texas Medical Association, was installed as president of the Auxiliary of the American Medical Association recently in San Francisco.

Mrs. Turner has served as first vice-president and president-elect of the Auxiliary. She is a past president and charter member of the Auxiliary of the Texas Medical Association and the Auxiliary of the El Paso County Medical Society. She served two years as constitutional secretary of the AMA Auxiliary and three terms as its treasurer. She was chairman in 1952 of the Texas Auxiliary's Advisory Committe.

TUBERCULOSIS

Hydrazine Derivatives Of Isonicotinic Acid (Rimifon, Marsilid) In The Treatment Of Acute Progressive Caseous-Pneumonic Tuberculosis

Robitzek, E. H. & Selikoff, I. J., Am. Rev. Tuberc. 65:402, 1952

Marsilid and Rimifon have been used in treatment of 44 patients with acute febrile, progressive caseous-pneumonic tuberculosis. All subjects experienced rapid and marked reversal of toxic states. Sputum bacillary contents were reduced in 38 patients and have remained repeatedly negative in 8 patients.

Sea View Hosp.

Clinical Clippings, July, 1952.

Pheochromocytoma

Successful Surgical Removal in Two Patients

By Ralph D. Ross, *Commander, MC, USN*, — Robert E. Mitchell, *Lieutenant, MC, USN*, — William E. Larsen, *Lieutenant, MC, USN (Ret.)* and James R. Dillon, *Commander, MC, USN*.

Pheochromocytomas are tumors of unusual interest because the arterial hypertension caused by them can be completely alleviated. Pheochromocytomas are relatively rare tumors of chromaffin sympathetic nerve tissue, which are most often seen in the adrenal medulla or in one of the many areas where chromaffin tissue occurs, and which produce epinephrine and/or norepinephrine in abnormal quantities.

The symptoms associated with pheochromocytoma can be extremely varied and bizarre and may simulate many other diseases.[1-6] Crede and Kerr[6] observed that many patients with pheochromocytoma may have symptoms resembling those of acute anxiety attacks or other psychiatric disorders. The two patients reported in this article had both been given psychiatric diagnoses prior to the establishment of the exact nature of their disabilities. The usual symptoms produced by the tumor are the result of the secretion of an excess of the pressor substance, either continuously or intermittently. The action is metabolic as well as hemodynamic, according to Cahill and Aranow.[7] The hemodynamic action is due primarily to a vasoconstriction of the peripheral arterioles with a resulting elevation of the blood pressure. The chief metabolic changes are increased blood glucose, blood lactic acid, and basal metabolic rate.[7]

Since 1886

Pheochromocytomas have been known to pathologists since 1886, when Frankel reported the autopsy findings of bilateral adrenal tumors and cardiac hypertrophy in an 18-year-old girl, who had had attacks of palpitation, headaches, and vomiting for three years.[8] The clinical adrenosympathetic syndrome was first described by Labbe' and associates[9] in 1922, and since then pheochromocytomas have been recognized with increasing frequency. In 1927, Mayo[10] reported the first successful surgical removal of such a tumor with cure of paroxysmal hypertension.

It is most important to perform indicated diagnostic procedures to rule out pheochromocytoma in all patients with hypertension, especially when the explanation of the symptoms and the hypertension is not satisfactory. Failure to diagnose the presence of a pheochromocytoma usually results in a progressive hypertension, progressive arterial disease, and eventual fatal outcome. The prognosis in patients afflicted with a pheochromocytoma is invariably fatal if the tumor is not removed.[11] The hypertensive crises in those with a history of paroxysms become more and more severe until death results from a violent crisis. The cardiovascular changes in a patient with chronic hypertension due to pheochromocytoma may not cause death as soon as those that occur in the paroxysmal type.[11] The importance of recognition of these tumors lies in the fact that successful extirpation ordinarily results in alleviation of the hypertension and its attendant vascular disease. Diagnosis of the presence of this tumor presents only one aspect of the problem.[12] Various diagnostic tests have been developed which greatly aid in establishing the diagnosis.[13-26] Accurate localization of the site of the tumor is necessary prior to surgery. Extraperitoneal pneumography, as described by Steinbach and associates,[27] proved to be a very satisfactory technic in the two patients herein reported, and the procedure produced no morbidity. Operative intervention and postoperative treatment presents many serious problems.[4, 7, 8, 11, 12, 21, 22, 25, 26, 28, 29] Successful surgical intervention usually results in a complete remission of symptoms and a cure of the hypertension. The operative mortality is still high. Snyder and Vick[30] reported a mortality rate of 22 percent in 58 patients operated on. More careful preoperative preparation, improved anesthesia and surgical technic, as well as the use of pressor and adrenolytic drugs during and following surgical intervention have produced a more favorable prognosis in these patients as well as a decreased mortality rate.

The two patients reported in this paper were treated at this hospital, and originally were described by Hood and Dickinson[31] as cases 1 and 3 in discussing the surgical approach indicated.

From U. S. Naval Hospital, Oakland, Calif. Comdr. Ross is now at U. S. Naval Hospital, Corona, Calif.

The opinions and assertions expressed are those of the authors and are not to be construed as reflecting policy or opinions of the Navy Department or the Naval Service at large.

Case Reports

Case 1. A 49-year-old man was admitted to this hospital on 27 December 1951 complaining of recurrent headaches dating back to 1943 and hemorrhage from the lungs of seven days' duration. He had enjoyed good health prior to 1943. At the onset the headaches were generalized and usually persisted from one to four hours, but on infrequent occasions lasted as long as 24 hours. The cephalgia would completely subside and he would be asymptomatic for three or four days. In 1944 he had a persistent headache of several months' duration. At that time he was under treatment for an acute sinusitis, and therapy directed toward this disability afforded only minimal relief. Following this the headaches again became recurrent in nature. In June 1951 the cephalgia became much more severe and consisted of daily episodes from 30 to 90 minutes in duration. Subsequent to June 1951 the headaches usually occurred at about 1000 each day and were often brought on by sudden changes in body position. Marked generalized weakness, a feeling of prostration and a profuse perspiration were associated with the episodes of headache.

In 1943 and 1944, while in the armed services, he was studied in order to determine the cause of the cephalgia and it was found that the blood pressure was elevated. He was subsequently discharged from the service in 1945 on the basis of arterial hypertension and anxiety reaction. Subsequent to 1945 he had been under the care of physicians almost continuously because of the recurrent headaches, joint symptoms and the elevated blood pressure. He was told on numerous occasions that the blood pressure was within normal limits, whereas on other occasions it was found to be as high as 240/135. He complained of mild dyspnea on strenuous exertion, but with the exception of the hemoptysis of bright red and frothy blood, which had been present for 7 days prior to his admission to the hospital, he denied other cardiovascular or respiratory symptoms. He had been treated for the hemoptysis in another hospital and he stated that he was "unconscious" most of that time.

Hypertension

His 73-year-old mother had had hypertensive cardiovascular disease for many years.

The physical examination on admission revealed evidence of chronic illness and moderate pallor. The blood pressure was 142/92. Other physical examination findings were within normal limits.

An electrocardiogram taken on admission to the hospital showed T-wave inversion. Blood glucose determinations were found to be normal, but during paroxysms of hypertension blood glucose was elevated as high as 296 mg. per 100 cc. A benzodioxane test during a paroxysm of hypertension, using 17 mg. of piperoxane hydrochloride (benodaine), produced a fall in blood pressure amounting to 110 mm. Hg systolic and 55 mm. Hg diastolic in 2 minutes. An oxygen insufflation in the retroperitoneal spaces demonstrated a 4- by 4.5-cm. mass in the region above the superior pole of the right kidney. The left kidney and suprarenal structures appeared normal on this study. The technic in this procedure was essentially as described by Steinbach and associates:[27] The patient was placed in the Sim's position. A number 20-gage spinal needle was inserted in the midline between the anus and coccyx and directed with a finger in the rectum into the presacral space for a distance of about 5 centimeters. The position of the needle was checked by attempting aspiration and then by injecting a few cubic centimeters of air. If resistance to the injection of air was encountered, the needle was inserted a centimeter deeper and rechecked. Oxygen was insufflated by fluid displacement using an apparatus consisting of two Kelly flasks and appropriate tubing. The volume was accurately measured and the pressure easily controlled by this technic. From 900 to 1,100 cc. were used. For detailed unilateral visualization the patient was placed in a position with the affected side up and the head of the bed elevated. One and one-half hours were allowed for diffusion; then test exposures were made at hourly intervals. When satisfactory diffusion had occurred, additional exposures were made. If not, the patient was repositioned for another hour. These included anteroposterior, right, and left oblique exposures. Other views have been of minimal value in our experience.

Skin Test

An upper gastrointestinal roentgenographic series with barium showed a delayed emptying of the stomach with otherwise negative findings. A radiographic examination of the spine demonstrated hypertrophic arthritic changes. A tuberculin skin test was positive in the first strength. Other indicated laboratory procedures and special examinations, including a funduscopic examination, a blood Kahn test, complete blood counts, erythrocyte sedimentation rates, numerous urinalyses, a Fishberg concentration test, numerous sputum examinations for tubercle bacilli by smear and culture, a roentgenogram of the chest, an electroencephalogram, intravenous pyelograms, and skin tests for

coccidioidomycosis and histoplasmosis were negative or within normal limits.

The patient's course in the hospital was characterized by recurrent episodes of severe frontal headaches, associated with profuse perspiration and generalized weakness. During these attacks his blood pressure was found to be markedly elevated to levels of over 300 mm. Hg systolic and 170 mm. Hg diastolic. The symptoms and paroxysms of hypertension usually persisted for from 30 to 90 minutes and often occurred at about 1000 each day. The blood pressure between paroxysms was found to be from 110/70 to 140/80. Massage to the right renal area produced a paroxysm of hypertension with headache, perspiration, and weakness, whereas massage over the left renal area elicited no change in the blood pressure and no symptoms. There was marked variation in the blood pressure taken at specific hours each day.

Cortisone

On 19 February 1952 the patient was started on cortisone, 100 mg. given intramuscularly twice daily for two days preoperatively and two days postoperatively, then 50 mg. twice daily for three days, 25 mg. twice daily for three days, then 25 mg. daily for three days. On 21 February 1952 he was prepared for surgical excision of the tumor, at which time his blood pressure was normal. Following induction anesthesia with thiopental sodium (pentothal) the blood pressure rose to 270/140. Benodaine given intravenously in a total dosage of 40 mg. produced only a slight, transient decrease in the blood pressure levels. Five milligrams of phentolamine (regitine) was administered intramuscularly, and shortly thereafter there was a gradual decrease in the blood pressure to preinduction levels. A thoracicoabdominal incision was made over the ninth rib on the right. The pleural cavity was exposed and the lung was partially deflated and retracted away from the diaphragm, as described by Hood and Dickinson.[31] The diaphragm was incised above the dome of the liver and the peritoneal cavity was entered. The liver was retracted medially, exposing the space between the liver and the upper pole of the kidney. The adrenal gland was readily identified. The cortical substance was stretched over and around a 4-cm. spherical mass. The tumor was well encapsulated, soft, and reddish brown, with yellow-brown nodules scattered diffusely over the surface. The lesion was gently dissected from its bed. At the time the tumor was manipulated there was a transient rise in the blood pressure. Shortly before the tumor was clamped off and excised, 1-norepinephrine (levophed) was administered intravenously, using 4 cc. in 1,000 cc. of normal saline solution.[23] At the time the tumor was excised the blood pressure dropped to 76/40. With 1-norepinephrine the blood pressure was maintained at a level of around 95/50. After surgery, 1-norepinephrine was continued intravenously at a slow rate for about 24 hours.

The patient's postoperative course was uneventful and his blood pressure stabilized at a level of 130/80. He had no recurrence of his preoperative symptoms and no recurrence of the paroxysmal hypertension. A histamine test was performed after surgery, using 0.05 mg. intravenously, and there was no elevation in the blood pressure. Serial electrocardiograms revealed that the T waves returned to within normal limits after surgical intervention. The patient was discharged to his home on 5 March 1952 completely asymptomatic. At the time of this writing his blood pressure is normal and he is enjoying good health.

The tumor weighed 17 grams. Histopathologic examination was diagnostic of benign pheochromocytoma. The tumor was analyzed by paper partition chromatography and a modification of von Euler's colorimetric method by Goldenberg.[32] It was found to contain norepinephrine in an amount of 7.62 mg. per gram of tumor tissue and epinephrine 1.72 mg. per gram of tumor tissue.

Case 2. A 45-year-old man was admitted to the hospital on 16 April 1952 because of nausea, vomiting, headache, and dizziness. He had had recurrent gastrointestinal symptoms since 1926 which usually consisted of pain in the abdomen, nausea, and vomiting, and were usually relieved by rest and by antacids. He was first admitted in 1945, but all findings of the upper gastrointestinal tract were negative at that time. In 1947, during a recurrence of his symptoms, he was admitted for suspected duodenal ulcer. His symptoms subsided in two months and he remained relatively well for seven months, but subsequently required several short periods of hospitalization because of recurrences. Beginning in 1949 he had severe, recurrent frontal and bitemporal headaches associated with weakness, pallor, nausea, and vomiting. These episodes tended to recur about once each month and would persist for from 30 minutes to two hours. From early 1950 until July 1951 he noted a progressive increase in the frequency of these symptoms. After July 1951 he had an episode each day, usually coming on at 1030 and lasting from 30 minutes to two hours. Body position and activity had no relation to his

complaints. On numerous occasions during recurrences he noted blood streaks with the emesis, and black tarry stools. During a previous period of hospitalization he was given an injection of histamine for a gastric analysis. This was followed by a violent reaction, characterized by headache, nausea, vomiting, extreme weakness, and syncope.

The physical examination at the time of his admission revealed an acutely ill, poorly nourished male. He appeared lethargic and there was moderate pallor. The blood pressure was 130/84 and the apical rate was 110 per minute. There was evidence of minimal cardiac enlargement to the left. Examination of the abdomen showed mild tenderness on deep palpation in the epigastric area. The lower pole of the right kidney could be palpated on deep inspiration. The remainder of the physical examination was not contributory.

Electrocardiogram

An electrocardiogram revealed definite T-wave abnormalities. There were marked T-wave changes as compared with a tracing taken in August 1951. A Fishberg concentration test showed a maximum specific gravity of 1.012. A urinalysis showed an albuminuria amounting to 300 mg. per 100 cc. Nonprotein nitrogen was 42 mg. per 100 cc. A histamine test was performed, using 0.025 mg. intravenously, with a resulting elevation of the blood pressure from a level of 130/80 to 290/200. Six minutes after the injection of the histamine, 18 mg. of piperoxane hydrochloride were given intravenously. This resulted in a drop in the blood pressure from 280/200 to 190/130 in a period of three minutes. Following the administration of histamine he developed a paroxysmal ventricular tachycardia, which persisted for five minutes, then subsided without specific therapy. Blood glucose determinations during paroxysms of hypertension were as high as 145 mg. per 100 cc. By injecting 1,100 cc. of oxygen an extraperitoneal pneumogram was made using the same technic as in case 1. This study showed the presence of a tumor mass in the right suprarenal area. All other indicated laboratory procedures and special examinations, including a blood Kahn test, complete blood count, erythrocyte sedimentation rate, funduscopic examination, blood cholesterol determination, roentgenogram of the chest, upper gastrointestinal roentgenographic series, and intravenous pyelograms were negative or within normal limits.

On the date of the patient's admission to the hospital, headache, syncope, nausea, vomiting, weakness, and pallor recurred and his blood pressure was found to be 270/170 and the apical rate, 180 per minute. In the course of the next several days he developed numerous episodes of paroxysmal hypertension during which electrocardiograms showed a change in rhythm from a normal sinus mechanism to a nodal rhythm, with runs of auriculoventricular dissociation.

Surgery

The patient was scheduled for surgical removal of the tumor on 8 May 1952. On 3 May 1952 quinidine therapy was started for the prevention and control of his cardiac arrhythmias. On 6 May 1952 intramuscular cortisone was begun in a dosage of 100 mg. twice daily for two days preoperatively and two days postoperatively, then 50 mg. twice daily for two days, 25 mg. twice daily for two days, and 25 mg. daily for two days. He was given 5 mg. of phentolamine intramuscularly before being taken to the operating room. At that time his blood pressure varied from 130/90 to 170/100, but after arrival in the operating room it rose to 250/190. Twenty minutes later it was 130/90. Induction anesthesia with thiopental sodium was begun and the blood pressure went to 240/180. An additional 5 mg. of phentolamine were given intramuscularly with no appreciable change in the blood pressure. Twenty milligrams of piperoxane hydrochloride given intravenously reduced the blood pressure only slightly, and it gradually returned to relatively normal levels after 75 minutes. At that time a thoracicoabdominal incision was made, using essentially the same technic as in case 1. The tumor was readily palpable when the diaphragm was opened and resection was accomplished. The tumor measured 6 by 4.5 by 4.5 cm. Upon removing it, the blood pressure dropped to unobtainable levels. The electrocardiogram showed a cardiac arrest. The pericardium was opened and the heart action was found to be arrested. Cardiac massage was promptly instituted and 0.5 cc. of 1:1,000 epinephrine was injected into the heart. After five minutes a second intracardiac injection of epinephrine was made, following which the heart began to beat at a rate of 40 to 50 per minute. Sixteen minutes lapsed before the blood pressure rose significantly. Intravenous administration of 1-norepinephrine in the concentration of 16 cc. per 1,000 cc. of fluids was started at a rapid rate immediately before the pedicle was clamped and was continued for about 48 hours postoperatively for maintenance of blood pressure. postoperatively he was given epinephrine in oil intramuscularly every two hours. The blood pressure gradually became stable at normal levels.

Electrocardiogram

Electrocardiographic tracings taken continuosly during surgery revealed the cardiac arrest described above and, in addition, showed numerous types of cardiac arrhythmias, including sinus tachycardia, nodal rhythm, auriculoventricular dissociation, paroxysmal ventricular tachycardia, numerous ectopic beats (multifocal ventricular, nodal, and auricular in origin), and incomplete and complete auriculoventricular block.

After the second postoperative day the patient's course was uneventful. There was no evidence of damage to the central nervous system from the cardiac arrest and hypotension. His blood pressure remained at normal levels and he had no recurrence of symptoms. Serial postoperative electrocardiograms showed a return to normal of the previously abnormal T waves and a histamine test, using 0.05 mg. intravenously, was negative.

The tumor weighed 65 grams and had essentially the same gross characteristics as that described in case.[1] The histopathologic picture was that of a bengin pheochromocytoma. The tumor was analyzed by paper partition chromatography and a modification of von Euler's colorimetric method by Goldenberg[32] and was found to contain norepinephrine in an amount of 7.3 mg. per gram of tumor tissue and epinephrine 3.2 mg. per gram of tumor tissue.

A 24-hour urine specimen, collected before the tumor was surgically removed, was found to contain a mixture of epinephrine and norepinephrine equivalent to 1100 *ug.* of norepinephrine.

Discussion

The symptomatology associated with pheochromocytoma may be extremely varied and bizarre, and the clinical syndrome may simulate many other disease processes. The usual symptoms have been well documented in the literature. The disease does not always appear in a paroxysmal form, and the blood pressure may be sustained for several weeks. When paroxysms occur they vary in duration, frequency, and intensity, persisting for a few minutes to many hours. The episodes usually increase in frequency as well as severity. Between attacks the patient is usually healthy, but the prognosis in patients with a pheochromocytoma is fatal if the tumor is not removed.

Examination of the patient during an attack is very helpful in establishing the diagnosis. The histamine test described by Roth and Kvale[16] is often used. The drug is administratered rapidly intravenously in an amount of 0.025 to 0.05 mg. In the normal person it usually produces little effect, but in the presence of a pheochromocytoma it may cause a severe paroxysm of hypertension. In case 2 herein reported the reaction to the test was positive before surgical removal of the tumor and became negative after the pheochromocytoma was removed. Following the preoperative administration of the drug in case 2 there developed a paroxysmal ventricular tachycardia which subsided without specific therapy. In case 1 the reaction to the histamine test was negative following successful surgical removal of the tumor but the test was not conducted before operation. Another test used for the establishment of the diagnosis is the benzodioxane test.[16] This procedure is not without some danger and is being replaced by the regitine test in many clinics. During a paroxysm of hypertension or in a patient with sustained hypertension, a calculated dosage of piperoxane hydrochloride is injected intravenously. In a person with a pheochromocytoma there is a definite drop in the systolic as well as diastolic blood pressure. In the two cases herein reported, piperoxane hydrochloride was used and the reaction to the test was positive in each case prior to operation. Massage over the right renal area produced symptoms and a paroxysm of hypertension in one of the patients reported in this article. The use of extraperitoneal pneumography as described by Steinbach and associates is an extremely valuable and in localizing the tumor. This retroperitoneal oxygen insufflation technic is an important step foreward in that tumors are readily demonstrated in the renal and adrenal areas. This procedure is accomplished painlessly, safely, and without morbidity to the patient. The results are consistently good. The technic is far superior to the older method of perirenal insufflation which was associated with a high morbidity and mortality rate. The resulting roentgenographic studies by this older technic were often of inferior quality and lacking in diagnostic details. In the two patients herein presented the tumors were well localized and outlined by the extraperitoneal oxygen pneumographic studies.

Treatment

The treatment of pheochromocytoma is surgical excision. Operation is not without danger and the mortality rate for the procedure is still high. Paroxysmal cardiac arrhythmias, including ventricular tachycardia and fibrillation, are prone to develop in the presence of excess epinephrine. The development of paroxysmal ventricular tachycardia was well demonstrated in case 2 and is undoubtedly a common cause of death at the time of operation. Because there is often a

rise in blood pressure when the tumor is being manipulated, it should be handled gently. Several drugs are available for use in combating this marked elevation of blood pressure, including the benzodioxane drugs, phentolamine, dibenamine, and others. The results obtained from the use of these drugs have been variable. There may be a dramatic fall in the blood pressure at the time of ligating the pedicle of the tumor. For this reason 1-norepinephrine, whole blood, and other indicated measures should be available for immediate use. In the two patients presented, 1-norepinephrine was started before the tumor pedicle was clamped. In case 1 the blood pressure was well controlled during surgical intervention and for the ensuing 24 hours by using 4 cc. of 1-norepinephrine in a 1,000 cc. of normal saline administered at a slow rate. In case 2 it was necessary to use 16 cc. of 1-norepinephrine in 500 cc. of whole blood or in 1,000 cc. of fluids and the rate of flow had to be increased to prevent hypotensive levels. An advantage of 1-norepinephrine over epinephrine for maintaining the blood pressure levels in patients with pheochromocytomas is that 1-norepinephrine increases the peripheral resistance and does not increase the cardiac output or produce cardiac arrhythmias. Cortisone was administered preoperatively as well as postoperatively to the two patients reported. There was no evidence of adrenal cortical insufficiency in either patient.

The surgical technic used in the two patients reported was the thoracicoabdominal approach as described by Hood and Dickinson.[31] This method proved most satisfactory and the tumors were readily accessible through this incision.

Close teamwork by the surgeon, the anesthetist, and the cardiologist is necessary in the management of a patient with pheochromocytoma. Adequate preoperative planning by all concerned is extremely desirous in this type of case so that the appropriate anesthetic agents will be employed, the desired preoperative medication administered, and an ample supply of all necessary drugs will be available in the operating room, and the postoperative therapy outlined.

Summary

Following surgical removal of the tumors in two patients with pheochromocytoma with paroxysmal hypertension the blood pressure remained completely normal and they both have remained asymptomatic. Postoperative histamine tests were negative in both of these patients. Postoperative electrocardiograms were normal, whereas prior to surgical intervention tracings in both patients were grossly abnormal. In the immediate postoperative period 1-norepinephrine for maintaining stable blood pressure levels was used with good results in both patients. Retroperitoneal oxygen insufflation studies accurately localized the tumor masses in both patients and was a painless and completely safe procedure.

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El Paso General Hospital

FREDERICK P. BORNSTEIN M. D., EDITOR

CASE NO. A-256

PRESENTATION OF CASE BY DR. JACK C. POSTLEWAITE

Presenting Complaint

This 28 year old white man was admitted to the El Paso General Hospital April 10, 1954, with headache and dizziness for the last six months. This was the eleventh admission of this patient to this hospital. Patient also complained of vomiting.

Family History

Non-contributory.

Past History

This patient was first admitted to El Paso General Hospital in the year of 1934 in a semi-comatose condition and at that time the diagnosis of diabetes with incipient diabetic coma was made. He had a number of admissions to the hospital between 1934 and 1937 and his diabetes was more or less stabilized during this period. He next was seen at the hospital in January, 1939 for a fracture of his wrist, from which he made an uneventful recovery. Little is known about the patient's history between 1939 and 1951 when he was admitted to another hospital in diabetic coma, which was complicated by a febrile disease. He was re-admitted in the same year with a recurrence of the febrile disease. During the year 1952 he developed an absolute glaucoma and the eye was removed, and on pathological examination of the eye the following findings were made: 1. Glaucoma, absolute; 2. Cataract, early; 3. Retinitis, diabetic; 4. Uveitis, chronic; 5. Detachment, partial retina; 6. Retinitis proliferans. Later in the year the other eye was removed. During the year 1953 the patient's condition showed a marked deterioration as hypertension became more prominent and he developed uremic symptoms. Since July, 1953 he has complained about anorexia, headaches, and vomiting. A neurological consultation at another hospital failed to demonstrate any organic neurological lesion. He was admitted to this hospital as a transfer from another institution.

Physical Examination

Physical examination revealed a young white man, acutely ill. T.: 99; P. 110; B. P. 220/110. The skin showed a marked papulosquamous eruption. Both eyes are missing. Neck: No significant findings. Heart: Enlarged to left anterior axillary line. Abdomen and extremities are not remarkable. Neurological examination not remarkable.

Laboratory Findings on Admission

RBC 4,800,000; W. B. C. 11,300; hemoglobin 15 mgs. Blood chemistry: B. U. N. 40; C02 combining: 18.4 meq/L; chlorides: 129 meg/L; sugar: 220 mg/100 cc. Urinalysis: Specific gravity: 1.014. Albumin: 4 plus; sugar: 3 plus; 15 to 20 WBC/HPF; 15 to 20 RBC/HPF; many red cell casts.

On the 13th of April patient went into coma with marked hyperventilation. His blood pressure was 190/100 on this date. Blood sugar was over 400. On the 15th he went into shock. His blood pressure dropped to 100/80. He developed Cheyne-Stokes respirations and died the same day.

During his stay at the various hospitals the following diagnoses were made: 1. Diabetes; 2. Hypertension; 3. Pyelonephritis, acute and chronic; 4. Glomerulonephritis, acute and chronic; 5. Arteriolar nephrosclerosis; 6. Kimmelstiel-Wilson syndrome.

Differential Diagnosis

Dr. Branch Craige:

This patient's diabetes was fairly severe and poorly controlled due to his own obstinacy apparently, according to Dr. Postlewaite's history. During the course of this twenty years of observation he developed abnormalities in the urine starting as early as 1934 when he was first found to have a 1+ albumin and since that time the urine has shown various abnormalities on various occasions. You will notice in the last paragraph of this history Dr. Bornstein has summarized the fact that many diagnoses were made including diabetes, hypertension, pyelonephritis, acute and chronic, glomerulonephritis, acute and chronic, arteriolar nephrosclerosis, and Kimmelstiel-Wilson syndrome. Having gone over most of these old

REVIEW OF LABORATORY FINDINGS FOR THE ENTIRE COURSE OF DISEASE

	1934	1935	1936	1937	1939	1951	1952	1953	1954
Blood pressure	96/60					156/108	190/110	180/110	210/125 230/120
Blood Count:									
W. B. C.	24,000			10,400	8,000	27,000 32,000	20,000 Hb 68%		
R. B. C.						4.5 Mil.	3.8 Mil.		
Sugar		209 Mg.		333 Mg.	182 Mg.				
B. U. N.					27		48.9	38	
Urinalysis:									
Specific Gravity				1.010		1.018	1.014		1.015
Albumin	1+	1+	Neg.	Neg.	1+	1+	1+		3+
Sugar	4+		4+	4+	4+	1+	3+		3+
Cells	4+ Gran. Casta	4+Gran. Casts			Many granular-casts	Gral Cast Many leukocytes			Few white cells.
Fever	98.6	98.6	100	99.4		103 100.8		99	

records, I am inclined not to pick and choose between these various diagnoses, but I think probably most, if not all, of them are correct.

First, we have a young man whose diabetes began at the age of eight. He has had albuminuria and other urinary findings from time to time during the course of twenty years. The most likely explanation of the urinary findings is Kimmelstiel-Wilson disease which, as you know, is so-called intercapillary glomerulosclerosis. I think there is some argument now about the name because originally it was thought that the sclerosis was hyalinization of the connective tissue between the capillaries, and more recent observation suggests that a thickening at the basement membrane is at fault. At any rate, in diabetics who survive more than six or eight years with their disease, it is very common to get such changes in the kidneys and with the prolongation of life of diabetics, we are likely to find that the Kimmelstiel-Wilson syndrome becomes numerically a more important renal disease than chronic glomerulonephritis. So that I think the fundamental diagnosis is diabetes mellitus and Kimmelstiel-Wilson syndrome. Now on top of that some other things are taking place.

He was admitted to Hotel Dieu a few years ago with fever and an obviously infected urine. There was pus in the urine, and a urine culture showed staphylococci and streptococci, and I think there is no question that at that time he had a complicating pyelonephritis. Many subsequent and previous urines, however, did not have pus cells in them or bacteria and my feeling is that the pyelonephritis was transient and not a chronic affair and hence not the cause of his chronic renal insufficiency. With regard to the suggestion that he had glomerulonephritis: In this record and the records that I reviewed at Hotel Dieu, I may have overlooked it, but I couldn't find definite evidence of acute or chronic glomerulonephritis. There is only one thing in the records that show even a suggestion of this, and that is one urine is said to have shown red cell casts on his last admission, which would indicate bleeding from the glomerulus and that could occur of course with anything indicating a glomerulitis most commonly a glomerulonephritis, but it could also occur should there be septicemia and with septic emboli to the capillary tufts, a possibility that we haven't entirely ruled out.

With twenty years of diabetes and many years of hypertension due to the Kimmelstiel-Wilson syndrome, certainly the patient also has developed arteriolar nephrosclerosis and some arteriosclerosis. I expect the pathologist to find traces of those diseases as well as the Kimmelstiel-Wilson syndrome.

The previous admissions seem to be fairly straightforward episodes of diabetic acidosis. On one occasion back in 1952 innumerable red cells were found but that was in a catheterized specimen and was not corroborated by later urinalysis. That was the same admission on which there was an acute urinary infection and that may either represent chronic or hemorrhagic cystitis. There is a past history of hepatic disease, but I could find no details either in this note or in the records as to what that amounts to so I will pass that up.

This diabetic also had some other complications. I mentioned his pyelonephritis. He also developed a retinopathy which resulted in his losing his eyes. There are a couple of points of interest in that regard.

Of some 200 diabetics reported by Dolger, 14% were partially or totally blind. Unfortunately retinal lesions and diabetes are extremely common when the disease runs any length of time, and it seems that the degree of control of the diabetes does not have very much effect on the amount of retinitis that occurs. In this patient the retinitis led to various other complicating changes which are listed here on the record and which perhaps Dr. Caylor might comment on later.

He had some skin lesions which are not well enough described in the record for me to attempt to make a diagnosis of them. There are two types of skin lesions that occur in long standing poorly controlled diabetes. One is called xanthoma diabeticorum and the other necrobiosis diabeticorum, both of which I know very little about. I was hoping that Dr. Garrett would be here to talk about them. They don't seem to be much like what this boy has.

In his last admission there is little doubt, but that he had diabetic coma. He apparently came in in diabetic acidosis and died afterwards. Whether this death was due to potassium difficulties or not, I don't know. The other question is whether these terminal episodes occurred as a result of sepsis and if so that would help explain the finding of some red cell casts in the urine during his last hospitalization.

My diagnoses then are:

1. Diabetes mellitus, juvenile type.
2. Kimmelstiel-Wilson syndrome.
3. Past history of pyelonephritis, acute.
4. Arteriolar nephrosclerosis and arteriosclerosis complicating the Kimmelsteil-Wilson syndrome.
5. A history of loss of the eyes due to vascular changes secondary to diabetes.

Dr. Robert N. Caylor:

I don't really care to comment too much, but since this is the first time I have seen the eye mentioned in a C. P. C. I better take advantage of it. Apparently this boy had the following sequence of events here. It probably started out with the diabetic retinitis and followed by ubeitis and probably a destructive lesion around the angle of the iris which of course produced glaucoma. The retinitis, probably a serous type, detached the retina and of course as time went on the hemorrhage in the vitreous produced what ends up as the retinitis proliferans with a number of strings of scars through the vitreous. Obviously this boy had a very severe situation. How much it had to do with diabetes I don't think that one can actually say. The retinitis that occurs of course is very common and is usually an irreversible situation, and even though the diabetes is controlled very well a retinitis persists and the scar tissue and exudates, etc., remain and there is no actual return of vision in these areas that are involved. As to the occurrence of the absolute glaucoma that is just something that no one can control, and it may be due to the ubeitis, or it may be even due to hemorrhage or thrombosis of the optic vein which of course produces an irreversible glaucoma and probably the only thing that they could have done at this time was to remove the eyes for relief of pain.

Dr. H. M. Gibson:

I don't think that there is any question but what we will find several different types of lesions in the kidneys. However, to these other multiple lesions I would like to add the distinct possibility that the patient has a renal papillary necrosis.

Dr. Jack C. Postlewaite

This boy was out of coma and being controlled very well and then went down hill with all the benefits of normal chemistries, just like many of our diabetics who get superb attention but for some reason they don't survive the treatment. The only thing that occurred to me is this skin lesion that Dr. Craige referred to looked like a folliculitis, but by virtue of the persistent febrile situation without too much blood count check, I thought in terms of a circulating staph albus or something which might be originated from the kidney and probably was symbiotic with this boy for weeks prior to any diagnosis. I hadn't seen him actually in that period of time and thought what occurred to be a headache was some focal lesion in the brain. I am not sure that this is any more than guess work, because I had nothing neurological to base it on. The interesting thing are the spinal fluid findings. It seems to me the protein was borderline elevated or normal. I am amazed because he is a long duration diabetic, and spinal fluid elevation would dwindle in a number of cases that I have followed that had secondary neurological manifestations.

Clinical Diagnosis:

Nephrosclerosis with Kimelstiel - Wilson syndrome diabetes.

Dr. Branch Craige's Diagnosis

1. Diabetes mellitus, juvenile type.
2. Kimmelstiel-Wilson Syndrome.
3. Past history of pyelonephritis, acute.
4. Arteriolar nephrosclerosis and arteriosclerosis complicating the Kimmelstiel-Wilson syndrome.
5. A history of loss of the eyes due to vascular changes secondary to diabetes.

Anatomical Diagnosis:

1. Subacute and chronic glomerulonephritis.
2. Arterial and arteriolar nephrosclerosis.
3. Intercapillary glomerulosclerosis.

Dr. Frederick P. Bornstein:

On autopsy we found the body of a young fairly well developed white man. Considering that he had a hypertension of long standing, it was rather surprising that the heart weighed only 300 grams and there was absence of cardiac hypertrophy. A small amount of fluid was present in the abdomen. Our main interest naturally is centered on the kidneys. (Fig. 1) They weighed together 290 grams which is a weight somewhat smaller than normal, but not very much smaller. The capsule of the kidney stripped with some difficulty and left a reddish brown surface, which was somewhat granular and showed numerous irregular depressed scars. (Fig. 1)

We then have a case here of a man who besides diabetes, has hypertension, albuminuria and scarred irregular kidneys. At this point it is the natural desire of any pathologist to state that the man had Bright's disease and then go home and call it a day. However, there exists a certain necessity to subdivide and classify Bright's disease, although the attitudes of most pathologists to such classification resemble the attitudes that most English speaking people have to the split infinitive, which according to Fowler varies from those who neither know nor care, to those who do not know, but care very much, to those who know and distinguish. To classify the pathological process in a kidney of this type we have to evaluate the microscopic findings and here the main source of difficulty and confusion arises because there is hardly an organ where there exists such an inter-relation between inflammatory degenerative and vascular changes. One has specifically to evaluate the changes in the glomeruli, in the tubules, in the interstitial tissue and in the vascular system and their effects upon each other. The most striking change in this particular kidney even on casual glance consists of a profound alteration of the general structure of the kidney (Fig. 2) with a diffuse lymphocytic infiltration of the interstitial tissue. The glomeruli are small and shrunken and many of them show so-called inflammatory crescents. In addition as can be seen easily in the center of the picture (Fig. 2), there is a severe arterial change with narrowing of the lumen and thickening of the intima. With these two components observed, we can speak safely about the presence of a subacute to chronic glomerulonephritis combined with an arterial nephrosclerosis. On examination under high power (Fig. 3), an additional change of the glomerulus is quite prominent. Beginning with the afferent artery and extending along the capillaries through the entire glomerulus, one sees the deposits of a heavy hyaline substance which gives the glomerulus a lobulated appearance. This change first described by Kimmelsteil-Wilson in 1936 is known as intercapillary glomerulos-

(Continued on Page 355)

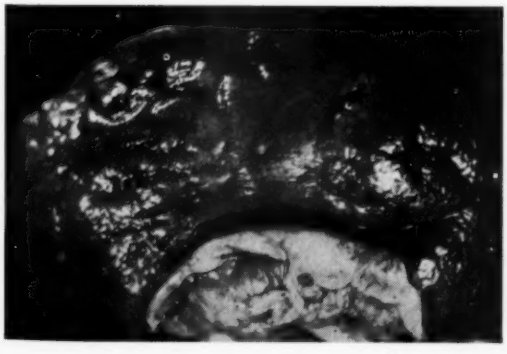

Figure 1

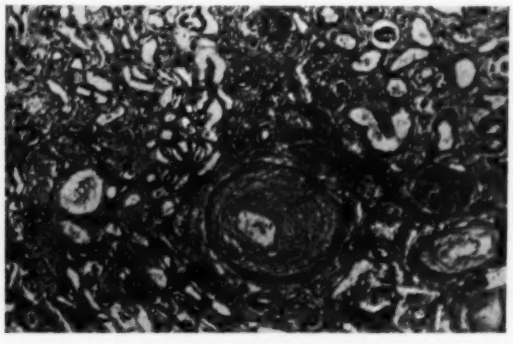

Figure 2

Clinical Notes from Medical Grand Rounds

These notes are abstracts of opinions expressed by staff members during case presentations at the Grand Rounds of the Pratt Diagnostic Clinic —New England Center Hospital.

Isoniazid is useful in the treatment of some types of tuberculosis, especially when combined with streptomycin and paraaminosalicylic acid. When used alone, however, bacterial resistance develops within a relatively short time. Some feel that it should be reserved for special situations when maximum therapeutic effect is of utmost importance as in tuberculosis meningitis, miliary tuberculosis, tuberculous pneumonia or in preparing patients for pulmonary surgery after other types of therapy have produced their maximum effect. Pellagra has been reported as a complication of isoniazid therapy and psychoses also may occur. Whether or not nicotinic acid should be given prophylactically is a question that has not as yet been answered.

Leukemia may manifest itself by the appearance of various skin lesions. Some of these may be incidental to the suppression of bone marrow functions (purpura from thrombocytopenia and superficial infections from agranulocytosis); others probably are allergic in nature representing reactions to the abnormal cells (eczematoid or exfoliative dermatitis); finally there are specific infiltrative lesions with a diagnostic pathologic appearance. The appearance of the last type is considered to be a poor prognostic sign.

Diffuse osteoporosis may be caused by: prolonged bedrest, old age, Cushing's syndrome (including excessive use of ACTH and cortisone), estrogen deficiency (postmenopausal and ovarian agenesis) and acromegaly. Diffuse bone lesions simulating those of osteoporosis also are sometimes seen in multiple myeloma and hyperparathyroidism.

X-ray visualization of the common bile duct is now possible in a high percentage of cases by use of a new radiopaque dye called Biligrafin (German manufacture—Schering) or Cholografin (U. S. manufacture—Squibb). This substance, which contains 3 mulecules of iodine, is given intravenously. Within 10 or 15 minutes there is beginning visualization of the bile ducts; best visualization is obtained between 20 to 40 minutes after injection. Visualization of the gallbladder itself is obtained from one to two hours after injection. Ordinarily, about 10 per cent of the substance is excreted by the kidneys and simultaneous visualization of the renal pelvis will occur. The chief value of this material (which apparently is remarkably free of toxicity) is in the study of the biliary tract in patients with recurrent symptoms following cholecystectomy when it may be possible to demonstrate or rule out a common duct stone; also it is of value in the study of patients in whom the gallbladder does not visualize following the administration of gallbladder dye by the usual oral technique.

In sodium and potassium depletion, which may occur as the result of diarrhea, vomiting and deficient intake, secondary renal disturbances may occur. Thus what starts out as a simple diarrhea may, if unchecked, result in a complicated syndrome simulating uremia. Control of the accompanying dehydration, sodium and potassium depletion and nutritional deficiencies results in improvement.

Hypercalcemia may occur as the result of fractures, destructive bone disorders, excessive use of vitamin D, excessive calcium intake, hyperparathyroidism, sarcoidosis, multiple myeloma (hyperglobulinemia), renal tubular acidosis and beryllium poisoning.

Myelography is often unsatisfactory for demonstrating spinal cord disease in the area between D9-12 because the curve of the spine in this area makes leisurely examination quite difficult.

Scleredema is a rare disorder characterized by non-pitting edema of the face, neck and at times the upper arms and chest; there may be pleural or pericardial effusion. It is probably one of the collagen diseases related to scleroderma and lupus erythematosus. Spontaneous recovery usually occurs but cases of prolonged duration are occasionally encountered.

An uncommon form of pulmonary cancer is the so-called "pulmonary adenomatosis" or diffuse primary alveolar carcinoma of the lung. The disorder apparently begins slowly and in both lungs at about the same time. The bronchi are not involved but mucus-producing cells diffusely invade alveoli; no primary site can be ascertained. In about

half of the cases there are no metastases, death occurring from pneumonia and respiratory insufficiency. In the remainder, distant metastases occur as in other types of lung cancer. The diagnosis may be suspected from the progressive downhill course, "soapsuds-like" sputum and diffuse x-ray changes, but can be established with certainty only by lung biopsy. There is no effective treatment.

Salmonella infections usually present in one of three forms: a) Salmonella enterocolitis, usually of short duration, most commonly caused by *S. enteriditis* or *S. typhimurium;* this type may be contracted from human carriers, improperly cooked or refrigerated food, or food infected by rodents. b) Salmonella (typhoid and paratyphoid) fever; diarrhea is not a common primary symptom but may be secondary to antibiotic therapy (chemical or secondary staphylococcic infection). c) Salmonella septicemia (usually caused by *S. cholera suis*) ; this type is characterized by extra-intestinal local infections like salpingitis, cholecystitis, osteomyelitis, pneumonia. Results of therapy are unpredictable; chloramphenicol neomycin and polymyxin B are the most effective antibiotics, but are not always successful where there are local infections requiring surgical drainage.

TOXICOLOGY

Parathion Poisoning In Children

Johnston, J. M., J. Pediat. 42:286, 1953

Five cases of parathion poisoning are presented. One patient died. Treatment of organic phosphate poisoning is as follows: Remove all clothing and bathe entire body with soap and water. Lavage patien if poison has been swallowed. Administer atropine* in adequate dosage until recovery is assured. Do not give morphine. (Aminophylline and theophylline are also contraindicated since the ability of these drugs to produce cortical seizures is materially increased in the presence of organic phosphate compounds).

(*Panparnit has been reported to be a more effective antagonist to parathion than atropine but extensive clinical trials are lacking. Ed.)

Clinical Clippings, May, 1953.

RECTAL PAIN

Editorial: North Carolina M. J. 13:100, 1952

Brief, intense rectal pain or "rectal crisis" is an alarming but relatively harmless condition due to temporary spasm of the musculature of the rectum, somewhat analogous to cardiospasm and pylorospasm. Attacks can be terminated by inhalation of amyl nitrite or administration of 1/200 to 1/100 gr. nitroglycerin.

Clinical Clippings, July, 1952.

Monthly Clinical Pathlogical . . .

(Continued from Page 353)

clerosis. The nature of this process is not well understood at the present time. There are two schools of thought. One who thinks that the material is elaborated beneath the endothelium, the other that it is precipitated upon the endothelium from the blood stream. Be this as it may, since the original observation of Kimmelsteil-Wilson there has been general agreement that the change, if present, is nearly always diagnostic for diabetes combined with hypertension and it is also agreed that it is only present in 30% to 45%

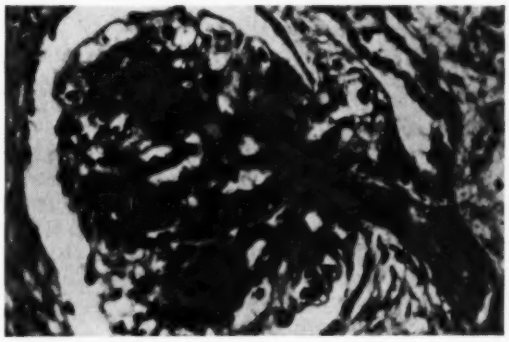

Figure 3

of kidneys removed from diabetic patients. The presence of the change does not seem to influence the course of the disease in any significant way.

In summary then we have a patient who had a poorly controlled diabetes for a long time and also had a slowly progressing nephritis for many years. Later he developed hypertension uremia and an intercapillary glomerulosclerosis. He finally died of renal failure due to the extensive damage to his kidneys.

TUBERCULOSIS

Further Experiences With Para-Aminosalicylic Acid

Ross, H. M., Canad. M. A. J. 66:353, 1952

Daily administration of 10 Gm. PAS and 1 Gm. streptomycin reduced the number of streptomycin-resistant strains of tuberculosis organisms encountered after 2 to 3 months treatment. Reduction of resistance was not affected by use of 2 Gm. PAS and 1 Gm. streptomycin daily.

Clinical Clippings, July, 1952.

HEMATOLOGY

A New Concept Of The Clotting of Blood And The Hemorrhagic Diseases

Quick, A. J., J. Missouri M. A. 47:749, 1950

Quick's new hypothesis assigns two actions to thrombin; coagulation of fibrinogen and labilization of platelets. Platelets disintegrate, liberating the activator of thromboplastinogen as well as a potent diffusible vasoconstrictor. It is the latter substance which is considered the principal agent effecting hemostasis.

Marquette U. School Med.

Clinical Clippings, December, 1950.

ANTICOAGULANTS

The Relationship Of Disorders Of The Blood Clotting Mechanism To Toxemia Of Pregnancy And The Value of Heparin Therapy

Butler, B. C., et al., Am. J. Obst. & Gynec. 60:564, 1950

After clinical trial of Heparin in treatment of four cases of toxemia of pregnancy, anticoagulant therapy was abandoned. Observations by the authors do not support the theory that thromboplastin is an etiologic agent in toxemia.

Clinical Clippings, December, 1950

DERMATOLOGY

Hair Loss From Sebum

Flesch, P., A. M. A. Arch. Dermat. & Syphilol. 67:1, 1953

The depilatory action of sebum can not be attributed solely to its squalene content*. It is evident from this study that sebum contains other, more potent depilatory compounds. These substances interfere with hair growth and keratinization in animals. If sebaceous secretion affects keratinization in a similar way in man, it will be necessary to revise a number of concepts in the pathology and therapy of cutaneous disorders. Continued investigation along these lines may yield interesting and important information.

**See Clinical Clippings, July 1952; March, 1953.*

REPETATUR: The possession of a microscope does not endow the pathologist with supernatural powers.—Highman.

Clinical Clippings, May, 1953

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